Amendments to Specifications:

~~Paragraph~~ 42 Delete current paragraph and replace as follows:

Page 8 – Second Full Paragraph. Please

~~Previous attempts have been made that use an asymptotic approach to setpoint, specifically, Rae Richard, US Patent 4,948,950 (incorporated herein as Rae). However, Rae's method has an intermediate setpoint asymptotically approaching the final setpoint, not the process variable. The control of the process variable is left to "the microprocessor is programmed in a manner well known in the art..." Like the Ramp/Soak PID controller, this approach does move the process variable to the setpoint as rapidly as if the setpoint were directly moved to its final position.~~

Previous attempts have been made that use an asymptotic approach to setpoint, specifically Rae Richard, US Pat. No. 4,948,950 (incorporated herein as Rae). However, Rae's method uses a linear algebraic equation for development of the "... the target slope below the setpoint temperature or is the target rate of change of the temperature of the output heating effect of the heating means... ". Because the equation is a linear function, the process variable does not approach setpoint as quickly as if the equation incorporated an nth-order exponential term. Thus the control equation proposed by Rae wastes resources (e.g., time, energy, etc.) when applied to a system in which movement of the process variable to setpoint as rapidly as possible without overshoot is the key control method selection criteria.

Page 10

~~Paragraph 66~~. Delete the word "Polynomial" and replace with "Exponential".

After second full paragraph in definitions

P is ~~Polynomial~~ Exponential Term (unitless)

~~Paragraph~~ 70. Delete current paragraph and replace as follows:

Page 11 – First Full Paragraph – Please

~~While not the only method, one method to integrate the error is shown in Fig. 2. At predefined intervals 40, the current error signal 15, is "Pushed" or loaded into the first position of a Z element software stack 44. At this same time the Z^th element is "Popped" or unloaded from the stack and discarded 44. The stack is summed and averaged as described above 48.~~

While not the only method, one method to integrate the error is show in Figure 2. At user defined intervals **40**, the current error signal **42** (and **15**) is "Pushed" or loaded into the first position of a Z element software stack **44**. At the same time, the Z^{th} element is "Popped" or unloaded from the stack and discarded **46**. The stack is summed and averaged as described above **48**. If integral correction is active **50** and the error is negative **22**, set each element of the previously defined software stack to 0 **51**.

~~Paragraph 72.~~ Delete current paragraph and replace as follows:

Page 11 – Third full paragraph and equation

~~The next function of the controller is a user selectable method to improve the K_{Bias} term. If the user has selected Automatic Bias Improvement 52, the error signal 15 is checked against a user selected K_{bias_adj} 54 at the time point 38 that Integral Correction is initiated if used. If the error signal is greater than K_{bias_adj} 54 and positive, the new K_{bias_adj} is calculated as follows: 58:~~

~~$K_{Bias} = K_{Bias} - (Error/2)$.~~

The next function of the controller is a user selectable method to improve the K_{bias} term. If the user has selected Automatic Bias Improvement 52, the error signal 15 is checked against a user selected $K_{bias\ adj}$ 54 at the time point 38 that Integral Correction is initiated if used. If the error signal is greater than $K_{bias\ adj}$ 54 and positive, the new K_{bias} is calculated as follows 60:

$$K_{Bias} = K_{Bias} - \frac{Error}{2}$$

~~Paragraph 73~~ Delete current paragraph and replace as follows:
Pg. 11 Fourth full paragraph and equation

~~If the error signal is greater than K_{bias_adj} 54 and negative, the new K_{bias_adj} is calculated as follows: 58:~~

~~$K_{Bias} = K_{Bias}$ + ABS(Error) + 1 [where ABS is absolute value function].~~

If the error signal is greater than $K_{bias\ adj}$, 54 and negative 56, the new $K_{bias\ adj}$ is calculated as follows 58:

$K_{bias} = K_{bias}$+*ABS(Error)*+1 [*where ABS is absolute value function*]

~~Paragraph 76 and 11 lines into (down from top) the pseudocode listing.~~ Delete the word "Polynomial" and replace with "Exponential". Page 12 - Third line from

The following is a pseudocode description of this invention:

If Process Variable > Setpoint (for reverse acting process) {If Process Variable<Setpoint (for direct acting processes)} [IF-THEN-ELSE Structure 1]

Then:

Calculate the error signal:

Error = Measurement – Setpoint [for reverse acting processes]

Error = Setpoint – Measurement [for direct acting processes.]

Calculate Control Variable:

$Output_c = K_a(Error)^P - K_{Bias}$

Where:

K_a	is	Term 1 Gain (unitless)
P	is	~~Polynomial~~ Exponential Term (unitless)
K_{Bias}	is	Output Bias (unitless)
$Output_c$	is	Equation Output

If $Output_c$ > 100% [IF-THEN-ELSE Structure 2]

Then

Output = 100% [maximizing controller input to process]

Else [IF-THEN-ELSE Structure 2]
If $Output_c < 0\%$ [IF-THEN-ELSE Structure 3]
Then
Set Output to 0% [stopping controller input to process]
Else [IF-THEN-ELSE Structure 3]
Output = $Output_c$
If Error < E_i for E_t [IF-THEN-ELSE Structure 4]
[Where: Ei = User Selected Error at which point polynomial calculation stops execution and integral correction begins execution. If user does not desire Integral Correction, this value is set to zero.
E_t = User Selected Time at which point polynomial calculation stops execution and integral correction begins execution.]
Then:
If Time < T_i [IF-THEN-ELSE Structure 5]
[Where: T_i = User Selected Integral Time Period]
Then
Integral = K_i
[Where: T_i = User Selected Integral Time Period
Push Integral to Z element Integral Stack
Pop Z^{th} element from Integral Stack]
Else [IF-THEN-ELSE Structure 5]
Endif [IF-THEN-ELSE Structure 5]

~~Paragraph 85.~~ Delete the word "Polynomial" and replace with "Exponential".
Page 13 Second line from the bottom

P is ~~Polynomial~~ Exponential Term (unitless)

Amendments to Drawings:
Cancel Figure 1 Feedback Control System and replace with the following **Figure 1: Feedback Control System**

Cancel Figure 2 Asymptotic Approach Algorithm Flowchart and replace with the following **Figure 2: Asymptotic Approach Algorithm Flowchart**